

Rapid Assessment Reference Condition Model

The Rapid Assessment is a component of the LANDFIRE project. Reference condition models for the Rapid Assessment were created through a series of expert workshops and a peer-review process in 2004-2005. For more information, please visit www.landfire.gov. Please direct questions to helpdesk@landfire.gov.

Potential Natural Vegetation Group (PNVG):

R9EGSG

Everglades Sawgrass

General Information

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Vegetation Type

Grassland

Dominant Species*

CLJA RHYNC3

ELCE PANIC

RHTR2

PAVI2

General Model Sources

☒ Literature

☒ Local Data

☒ Expert Estimate

LANDFIRE Mapping Zones

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Rapid Assessment Model Zones

☐ California

☐ Pacific Northwest

☐ Great Basin

☐ South Central

☐ Great Lakes

☒ Southeast

☐ Northeast

☐ S. Appalachians

☐ Northern Plains

☐ Southwest

☐ N-Cent.Rockies

Geographic Range

Everglades sawgrass occurs in Southern Florida.

Biophysical Site Description

This PNVG occurs on shallow to deep peat/organic soil. It occurs on flat sites ranging from 0-2 feet in elevation that have an average hydroperiod of 10 months (range 5-12 months).

Vegetation Description

Everglades sawgrass is a medium tall to tall (3m) grassland with scattered bayheads of short to medium sized broadleaf evergreen trees and shrubs. Vegetation is dominated by sawgrass (*Cladium jamaicense*), but composition is largely dependent upon hydroperiod, fire frequency, and soil depth. Species composition may range from nearly monotypic stands of sawgrass to a combination of 25-30 species including: spikerush (*Eleocharis cellulosa*), water hyssop (*Bacopa caroliniana*), beak rush (*Rhynchospora tracyi*), switchgrass (*Panicum virgatum*), cattail (*Typha* spp.), maidencane (*Panicum hemitomon*), and saltmarsh morning-glory (*Ipomea sagittata*). Periphyton mats are abundant throughout the sawgrass system. Denser and taller stands of sawgrass typically occur on higher areas with deeper organic soils. Sparse, shorter stands occur in lower topography on shallower soils (Kushlan 1990, Gunderson and Loftus 1993).

Sawgrass may be invaded by native trees and shrubs including willow, wax myrtle, and button bush.

Disturbance Description

Everglades sawgrass is classified in Fire Regime Group II, stand replacement, with a 2-15 year fire interval. Moderate to high intensity fires occur at 6-15 year intervals, and appear associated with El Nino Southern Oscillation influences (Beckage et al., 2003; Gunderson and Snyder, 1994; Beckage and Platt, 2003). Natural, light ground fires typically occur every 1 to 5 years (Florida Natural Areas Inventory 1990). Most

*Dominant and Indicator Species are from the NRCS PLANTS database. To check a species code, please visit <http://plants.usda.gov>.

of the acreage burns from April to June during the drier, early lightning season. Less common (1-2/decade) severe fires associated with drought occur primarily from March-May (Gunderson and Snyder, 1994).

Anthropogenic fires are dominant in some areas. The natural fire regime is currently altered by urbanization and artificially controlled water levels (Lockwood et al., 2003).

An absence of fire results in the buildup of soil/peat. This buildup also makes severe fires, which can consume the peat soil, more likely. These intense drought fires can lower the surface, changing the area from a sawgrass swale into a wet slough, at least until the peat builds up again (Gunderson, 1994).

Adjacency or Identification Concerns

Common invasive species include *Melaleuca* (*Melaleuca quinquenervia*) and *Casuarina* (*Casuarina* spp.).

Everglades sawgrass is often adjacent to Marl Prairie (R9MAPR), Coastal Prairie/Mangrove (R9SFPM), or cypress savannas (e.g., Big Cypress Preserve).

Much of the area's hydrology is vastly altered by creation of the Water Conservation Areas, and other associated dikes, levees, and canals. Some of the resulting changes may be permanent because the weight of stored water in the WCAs may have compressed the substrate.

Scale Description

Sources of Scale Data	<input checked="" type="checkbox"/> Literature	<input checked="" type="checkbox"/> Local Data	<input checked="" type="checkbox"/> Expert Estimate
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Fires can range in size from 1 hectare to 100,000 hectares. Hurricanes can cause huge flooding effects, possibly affecting the entire ecosystem at once.

Issues/Problems

The flood control and storage systems of this region have vastly altered the Everglades. Anthropogenic fires are dominant in some areas, but the changes in hydrology have also affected the course of natural fires. Hurricanes are not a problem for this system, for it has evolved with such disturbance. However, the actions of water managers in response to hurricanes have threatened to destroy the ecosystem.

Model Evolution and Comments

The pre-existing FRCC is EGSG. The pre-existing Ecological System description is CES411.286.

The estimates of natural fire frequency and intensity are very uncertain. This also means the estimates of the 'natural' area within each class are uncertain. It is a guess and is open to review. Estimates of canopy closure and height should receive some scrutiny.

Perhaps contact Sonny Bass (sonny_bass@nps.gov, Everglades National Park), Bob Panko (Bob_Panko@nps.gov, ENP Fire Cache), Julie Lockwood (lockwood@aesop.rutgers.edu, Rutgers University), Stuart Pimm (StuartPimm@aol.com, Duke University), or experts at Florida International University.

This PNVG received two reviews. As a result of the reviews several descriptive changes were made to the original model description including:

1. Removing gulf muhly as a dominant species,
2. Adding several species including *Rhynchospora traceyi*, *Bacopa caroliniana*, and *Panicum virgatum* to the vegetation description,
3. Adding the presence of periphyton mats to the vegetation description,
4. Changing the mean fire interval from 1-10 years to 2-15 years,
5. Removing the phrase "moderate to high intensity fires occurring any time of the year" and substituting

“Moderate to high intensity fires occur at 6-15 year intervals, and appear associated with El Nino Southern Oscillation influences (Beckage et al., 2003; Gunderson and Snyder, 1994; Beckage and Platt, 2003).”

Succession Classes

Succession classes are the equivalent of "Vegetation Fuel Classes" as defined in the Interagency FRCC Guidebook (www.frcc.gov).

Class A 93%

Early1 All Structures

Description

Class A is characterized by a range of conditions from early post replacement to sawgrass swale. This class lasts up to 10 years post replacement, and is maintained in Class A by a moderate intensity, typically growing season fire. Species composition and structure includes primarily sawgrass of varying heights and densities. Class A can transition to Class C following a severe ground fire which consumes and lowers the soil level, followed by high water levels.

Indicator Species* and Canopy Position

CLJA Upper

Upper Layer Lifeform

- ☒ Herbaceous
☐ Shrub
☐ Tree

Fuel Model 3

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	75 %
Height	Herb Short <0.5m	Herb Tall > 1m
Tree Size Class	no data	

- ☐ Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

Class B 4%

Mid1 Closed

Description

Class B is characterized by a mid-stage sawgrass swale and shrub wetland, and occurs after 10 years following a post replacement event. Encroaching shrubs include willow, wax myrtle, and button bush. Class B can revert to A by repeated growing season moderate to high intensity fires at 1-5 year intervals. Class B can transition Class C (slough) following a severe fire which consumes and lowers the soil level, followed by high water levels.

Indicator Species* and Canopy Position

CLJA Middle
MYCE Upper
CEOC2 Upper
SACA5 Upper

Upper Layer Lifeform

- ☐ Herbaceous
☒ Shrub
☐ Tree

Fuel Model 3

Structure Data (for upper layer lifeform)

	Min	Max
Cover	25 %	75 %
Height	Shrub Medium 1.0-2.9m	Tree Short 5-9m
Tree Size Class	Sapling >4.5ft; <5"DBH	

- ☒ Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

Sawgrass may still be dominant. It can be up to 3m in height and 50-90% canopy cover.

*Dominant and Indicator Species are from the NRCS PLANTS database. To check a species code, please visit <http://plants.usda.gov>.

Class C 2%

Late1 Open

Description

Class C is characterized by an open water area formed following severe fires that occur during drought conditions and consume the organic soils, followed by high water levels. Sawgrass stems are submerged by the high water levels. Class C can return to Class A after drought condition fires followed by low water levels, if there is water flow. If there is no water flow, then the area typically remains in Class C.

Indicator Species* and Canopy Position

CLJA Upper

Upper Layer Lifeform

- ☒ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	0 %	25 %
Height	Herb Short <0.5m	Herb Tall > 1m
Tree Size Class	no data	

- ☐ Upper layer lifeform differs from dominant lifeform.
 Height and cover of dominant lifeform are:

Class D 1%

Late1 Closed

Description

Class D occurs as hydric Hammock, mixed cypress-hardwood swamp (no water flow), or mangrove swamp (tidal flow). Class D is maintained by no fire. Following a severe fire Class D could revert to Class B or Class C, depending upon water levels.

Indicator Species* and Canopy PositionTAAS
RHMA2**Upper Layer Lifeform**

- ☐ Herbaceous
☐ Shrub
☒ Tree

Fuel Model no data**Structure Data (for upper layer lifeform)**

	Min	Max
Cover	25 %	75 %
Height	Tree Regen <5m	Tree Medium 10-24m
Tree Size Class	Sapling >4.5ft; <5"DBH	

- ☐ Upper layer lifeform differs from dominant lifeform.
 Height and cover of dominant lifeform are:

Class E 0%

Late1 All Structures

Description**Indicator Species* and Canopy Position****Structure Data (for upper layer lifeform)**

	Min	Max
Cover	%	%
Height	no data	no data
Tree Size Class	no data	

Upper Layer Lifeform

- ☐ Herbaceous
☐ Shrub
☐ Tree

Fuel Model no data

- ☐ Upper layer lifeform differs from dominant lifeform.
 Height and cover of dominant lifeform are:

Disturbances

Non-Fire Disturbances Modeled

- ☐ Insects/Disease
☒ Wind/Weather/Stress
☐ Native Grazing
☐ Competition
☐ Other:
☐ Other:

Fire Regime Group: 2

I: 0-35 year frequency, low and mixed severity
 II: 0-35 year frequency, replacement severity
 III: 35-200 year frequency, low and mixed severity
 IV: 35-200 year frequency, replacement severity
 V: 200+ year frequency, replacement severity

Historical Fire Size (acres)

Avg: 1000
 Min: 1
 Max: 500000

Fire Intervals (FI):

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is the central tendency modeled. Minimum and maximum show the relative range of fire intervals, if known. Probability is the inverse of fire interval in years and is used in reference condition modeling. Percent of all fires is the percent of all fires in that severity class. All values are estimates and not precise.

Sources of Fire Regime Data

- ☒ Literature
☒ Local Data
☒ Expert Estimate

	Avg FI	Min FI	Max FI	Probability	Percent of All Fires
Replacement	3	2	15	0.33333	96
Mixed					
Surface	70			0.01429	4
All Fires	3			0.34763	

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